

REMARKS:

Claims 9 – 11 have been canceled.

Claims 1, 12 and 36 have been amended to more clearly describe the novel formulation, composition, and method, respectively, as involving a triazole fungicide that is dispersed in a polymer matrix in the form of particles that have a mean diameter between about 3 – 50 microns, and where the formulation has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

Support for the description of the invention as a “formulation” can be found in the specification at least at page 15, line 8.

Support for the feature that the formulation comprises particles having an average mean diameter between about 3 – 50 microns can be found in the specification at least at page 19, line 8.

Support for the feature that the formulation has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide is found in the specification at least at page 17, line 25 – page 18, line 13 and at page 16, lines 1 - 6. The meaning of the comparison of the phytotoxicity of the present formulation with that of conventional fast release formulations of such fungicides is clearly described in the specification at least at page 15, line 22 – page 16, line 24, and a number of comparisons of the novel formulations with conventional fast release formulations are shown in the Examples and the Figures.

Claims 1 – 8, 12 - 18 and 36 - 51 are in the case.

No new matter has been added.

Rejection of claims 1, 2, 12, 13, 18, 36 and 39 under 35 USC §102() as being anticipated by Stock '96.

Although the Action dated 12/26/00, in which this ground for rejection was raised, did not identify the sub-part of section 102 being cited, the next Action, dated 6/25/01 refers to it as a §102(a) rejection. In fact, it is believed that the earliest date for the Stock '96 reference is November 18 – 21, 1996, a date that is less than one year prior

to the priority date of the present application. Therefore, the Stock '96 reference would not be available under §102(b).

In order to anticipate a claim, a single reference must teach each and every claim limitation. In this instance, the Stock '96 reference does not teach that the formulation is a matrix microparticle, nor that the microparticles must be of a size between about 3 – 50 microns mean diameter, nor that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide – as is required in each of the present claims.

Accordingly, it is respectfully requested that this grounds for rejection be reconsidered and withdrawn.

Rejection of claims 1 – 3, 7, 12 – 18, 36, 39 and 45 under 35 USC §102(b) as anticipated by Russell *et al.* in WO 90/103,732.

The Russell *et al.* publication is directed to fungicidal enzymes and formulations that incorporate these enzymes. The publication appears to disclose triazoles as being used only in solution or liquid dispersion form, and matrix particles having the features of the present matrix microparticle formulation that were missing from the Stock '96 reference, as described above, are also appear to be missing from the Russell *et al.* reference.

Accordingly, it is respectfully requested that this grounds for rejection be reconsidered and withdrawn.

Rejection of claims 1 – 18 and 36 – 45 under 35 USC §103(a) as obvious over Russell *et al.* in view of Stock '96, EP 0004758 to Tocker, EP 0729700 to Capuzzi *et al.*, and U.S. Patent No. 5,719,103 to Dao *et al.*

In order to support a *prima facie* case of obviousness under §103(a), it must be shown that each limitation of a claim is found in the prior art, and that the prior art provides a motivation to modify or combine references in a way that would be reasonably certain to successfully provide the claimed invention.

In the present case, it is believed that only EP 0004758 to Tocker describes what could be argued to be a matrix microparticle, and that none of the cited references teach that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide. Absent this feature, none of the references, alone or in combination, teaches or suggests the presently claimed invention.

Nor, it is maintained, would it be obvious to arrive at the combination of features that is described in the claims by mere optimization. Each of the individual features of the claimed formulation work in combination to provide the advantages of the present invention. The optimization of one element, alone, would not provide a reasonable expectation of success that is required to support a rejection under §103(a).

It is respectfully requested, therefore, that the present ground for rejection be reconsidered and withdrawn.

Rejection of claims 1 – 3, 5, 7, 8, 12 – 18, 36 – 39, 41, 43 and 45 under 35 USC 102(e) as anticipated by U.S. Patent 5,719,103 to Dao *et al.*

The Dao *et al.* patent disclosed powder formulations comprised of a blend of dry ingredients. It is maintained that this structure is different from the present matrix microparticles in that the polymers of Dao *et al.* are used as adhesion ingredients (to enhance the tendency of the powder to stick to the plant to which it is applied), rather than as matrix polymers within which is dispersed the triazole fungicides, as in the present formulation. Moreover, it is not believed that Dao *et al.* teach or suggest the feature that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide – as is required in each of the present claims.

Accordingly, it is respectfully requested that the present ground for rejection be reconsidered and withdrawn.

Rejection of claims 1 – 18 and 36 – 51 under 35 USC §103(a) as obvious over Stock '96 or Capuzzi *et al.* and U.S. Patent No. 4,664,696 to Schaub and U.S. Patent 5,725,869 to Lo, or U.S. Patent No. 5,589,194 to Tsuei *et al.*

In addition to the references listed above, the Action dated 6/25/01 also discusses EP 0201 214 to Kanda.

As discussed above, it is maintained that Stock '96 and Capuzzi *et al.* do not teach the features that the matrix microparticles have a mean diameter of between 3 – 50 microns, nor that that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide. In order to support an obviousness rejection under 35 USC §103(a), therefore, these limitations must be found in at least one of the other cited references. It is respectfully maintained that none of the cited references teach these missing features.

U.S. Patent No. 4,664,696 to Schaub describes and claims triazole fungicides *per se*, but does not appear to teach matrix microparticles. The reference appears to lack the teaching of a particular particle size and the teaching of any relationship between the amount of a matrix polymer and a triazole fungicide – as required in the present claims.

U.S. Patent 5,725,869 to Lo describes porous, spongy microparticles that are from about 3 – 300 microns in size, which can be loaded with active ingredients, including fungicides, either during their production or after. The particles are produced with the inclusion of plasticizers that provide the spongy structure. It is believed that these particles are different than the matrix microparticles of the present invention, because the present specification defines “matrix” as a surrounding material in which another material is entrapped, embedded, dissolved, dispersed, or otherwise distributed. The claims further limit the present matrix microparticles to those in which a triazole fungicide is dispersed in a polymer. In the particles described in the Lo patent, the particles must resemble a sponge, which is not a form that the present matrix microparticles exhibit. It is maintained that the spongy structure of Lo cannot “surround” the triazole fungicide of the present matrix microparticles, but rather, absorbs them into the pores of the spongy structure. This interpretation is made more probable on

account of the ability to “load” “blank” particles of Lo with an active merely by soaking it in a medium containing the active.

Furthermore, it is believed that Lo does not teach the use of triazoles, nor that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

U.S. Patent No. 5,589,194 to Tsuei *et al.* teaches the production of particles made by the injection of an encapsulation composition (which can contain an active component) into a quenching liquid. The encapsulation composition is preferably a wax, such as carnauba wax, but can be a polymer wax, such as a polyethylene wax. The Tsuei *et al.* reference, however, does not teach the use of triazole fungicides, not that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide. Although, the Tsuei *et al.* reference describes that the size of its particles can be controlled, no size range is disclosed, and it is maintained that it would be improbable that the technique that Tsuei *et al.* describe could produce particles sufficiently small to be within the size range of the present microparticles.

EP 0201 214 to Kanda *et al.* describes the formation of particles that are very small (from 0.01– 2 microns) in comparison with the present matrix microparticles, which are between about 3 – 50 microns. It is believed that the mass transfer and phytotoxicity properties of the Kanda *et al.* particles would be significantly different than those of the present particles due to the difference in size. Moreover, the Kanda *et al.* reference does not teach that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

It is believed, therefore, that no reference teaches or suggests the claimed feature that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release

formulations of the triazole fungicide. It is maintained that without such teaching, there is no basis for the support of a *prima facie* case of obviousness under 35 USC §103(a), and the reconsideration and withdrawal of the present ground of rejection is respectfully requested.

Rejection of claims 1, 7 – 12, 17 and 18 under 35 USC §102(b) as anticipated by FR 2702929 to Autant *et al.*

The Autant *et al.* reference describes the production of relatively large particles (50 – 2000 micron) that can contain azaconazole as one of the possible actives and a polyethylene wax having a molecular weight of between about 500 – 3000 as a possible matrix material. Besides its failure to teach a matrix microparticle of the size range claimed by the present invention, the Autant *et al.* document fails to teach or suggest that the formulation comprises a triazole fungicide dispersed in a polymer matrix and has a matrix polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

Accordingly, it is maintained that the Autant *et al.* reference does not teach or suggest each and every limitation of the present claims, and it is respectfully requested that this ground of rejection be reconsidered and withdrawn.

Rejection of claims 1 - 18 and 36 - 51 under 35 USC §103(a) as being obvious over U.S. Patent No. 5,589,194 to Tsuei *et al.* in view of FR 2 702 929 to Autant *et al.*, and further in view of European Patent Specification 0 201 214 to Kanda *et al.*, Derwent Abstract 97-80461 to Stock, Applicant's admission at pages 1,2 of the specification, and WO 90/103732 to Russell *et al.*

It is respectfully requested that the rejection of claims 1 - 18 and 36 - 51 under 35 USC §103(a) as being obvious over U.S. Patent No. 5,589,194 to Tsuei *et al.* in view of FR 2 702 929 to Autant *et al.*, and further in view of European Patent Specification 0 201 214 to Kanda *et al.*, Derwent Abstract 97-80461 to Stock, Applicant's admission at pages 1,2 of the specification, and WO 90/103732 to Russell *et al.*, be reconsidered in view of the amendments to the claims and because of the reasons discussed below and be withdrawn.

Claims 1, 12 and 36, which are independent claims from which all rejected claims depend, have been amended to describe the novel formulation, composition, and method, respectively, as comprising particles having a mean diameter between about 3 – 50 microns comprising a triazole fungicide dispersed in a polymer matrix which has a matrix-polymer-to-triazole fungicide weight ratio sufficient to provide a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide.

It is respectfully maintained that the Tsuei *et al.* reference, alone or in combination with any one or more of the cited secondary references, neither teaches nor suggests every element of the present claims.

As discussed above, Tsuei *et al.* describes a method of microencapsulation and the microcapsules produced. The method is described as dissolving an active component in a solid matrix-forming material that has been thermally softened, and then injecting the mixture into a quenching liquid to form microcapsules. The active components that are described by Tsuei *et al.* (at col.4, lines 8 - 36) appear to focus primarily on nutrients and cosmetics, and the like. Fungicides are not mentioned, and there is no mention of a triazole fungicide, or of a 50% reduction in the phytotoxicity of a formulation that includes a triazole. These elements, which are included in every present claim, must, therefore, be supplied by a secondary reference. Moreover, the art cited must suggest a reason to combine or modify so as to arrive at the claimed invention. It is respectfully maintained that the secondary references do not supply the requisite elements, nor do they supply a motivation to modify any one or more of them to arrive at the claimed invention.

In particular, as discussed above, the Autant *et al.* reference lacks a teaching of particles, compositions, or methods that either (1) provide particles having a size between 3 – 50 microns, or (2) have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, as required by all claims.

The Kanda *et al.* reference, as discussed above, describes the production of polymeric microparticles having pesticidal activity that are formed by emulsion polymerization of ethylenically unsaturated monomers in a mixture containing a pesticide (col. 2, lines 10 - 27). The pesticide can be a fungicide (col.1, line 8, and col.

5, lines 47 - 57), and, among a long list of potential candidates, the fungicide can be an azole (col. 6, lines 38 - 41). The particles formed are from 0.01 to 2 microns in size (col. 2, lines 11 - 14). The reference states that its particles can carry an active substance in a chemically stable manner and release it at an optimum concentration for a long period of time (col. 2, lines 36 - 39). However, the Kanda *et al.* reference is silent as to the use of triazole fungicides, and does not teach or suggest particles that are of the size of the present matrix particles, or which have a phytotoxicity that is reduced by at least 50% as compared to conventional fast-release formulations of the triazole fungicide, as required in the claims.

The Derwent Abstract 97-80461 of a publication by Stock is described above. As discussed, it does not add either of the missing features.

The Office points to a statement by the Applicant at pages 1, 2 of the specification as an admission of an element of the claim. However, the extent of the teaching at that point of the specification appears to be limited to the ideas that some triazole fungicides can be phytotoxic, and that controlled release of a pesticide has occasionally been used as a method of controlling its phytotoxicity. It is maintained that this information does not provide an admission that is pertinent to the feature describing the control of the ratio of the weight of the matrix polymer-to-triazole fungicide so as to provide a reduction in phytotoxicity of at least 50%, which is now an element of the claims.

As discussed above, WO 90/103732 to Russell *et al.* describes fungicidally active enzyme preparations that can also include certain fungicides -- with some triazoles included. However, the publication appears to be silent as to the inclusion of such active ingredients in a controlled release form. Also, it makes no mention of a particular reduction in phytotoxicity. Accordingly, it is maintained that the WO 90/103732 publication cannot provide the claimed elements that are missing from the Tsuei *et al.* patent, as well as from each of the other cited references.

It is also maintained that no suggestion or motivation is provided in the art to modify any one or more of the cited references in a manner that would arrive at the invention as presently claimed. None of the cited references is believed to recognize the importance of the combination of a certain particle size range and a ratio of the relative amounts of matrix polymer and triazole fungicide that reduce the phytotoxicity of

the triazole (as described in the claims) as an objective. Thus, the cited references cannot provide guidance to arrive at the solution that is described by the present claims.

Accordingly, it is maintained that there is no reference that, alone or in combination, teaches or suggests the presently claimed invention. It is respectfully requested, therefore, that the present rejection be reconsidered and withdrawn.

Rejection of claims 1 – 4, 7, 8, 12, 13, 17, 18, 36, 39, 40, 43 – 46, 48 and 50 under 35 USC §102(e) as anticipated by U.S. Patent No. 6,103,253 to Hoffmann *et al.*

In the Action dated March 5, 2003, the Office argued that the Hoffmann *et al.* '253 patent teaches the instant polymer containing triazole particles, and that these structures provide controlled release functions similar to the present invention.

However, it is respectfully maintained that the Hoffmann *et al.* '253 patent does not teach or suggest the matrix microparticles that are a feature of the present invention. Rather, the '253 patent teaches the production of a sprayable film-forming active substance preparation where active substances, which can include fungicides such as certain triazoles, are mixed into a liquid preparation comprising an organic solvent and a polymer. The material can be sprayed onto plants, where the polymer provides pressure-sensitive adhesive properties and aids in forming a film. Because the Hoffmann *et al.* '253 structure is in the form of a film, it cannot be a matrix microparticle, as required by the present claims, nor can it have a mean diameter of from about 3 – 50 microns, as is also required.

Accordingly, it is maintained that the Hoffmann *et al.* '253 patent does not teach or suggest each and every feature of the present claims, and it is respectfully requested that this ground of rejection be reconsidered and withdrawn.

Rejection of claims 1 – 3, 7 – 12, 15, 17, 18, 36, 39 and 43 – 51 under 35 USC §102(e) as anticipated by U.S. Patent No. 5,914,295 to Hoffmann *et al.*

The Hoffmann *et al.* '295 patent describes implantable molded articles for the administration of active substances to plants. This type of structure is exemplified by a nail-like article into which is incorporated an agricultural active material, among which can be certain triazoles, which can be incorporated in particulate form (col.6, lines 45 – 49). However, the '295 patent does not describe its molded articles as matrix

microparticles, as required by the present claims. In fact, it is believed that a microparticulate form would destroy an important advantage of the articles of the '295 patent – that of being able to deliver active materials for intracorporeal application to plants (col. 3, lines 25 – 28). Moreover, the '295 patent does not describe the feature of a matrix microparticle having a mean diameter of between about 3 – 50 microns, or of such a microparticle having a designed matrix polymer-to-triazole fungicide weight ratio in order to provide a certain level of reduction of phytotoxicity – as is required in the present claims.

It is respectfully requested, therefore, that the present ground of rejection be reconsidered and withdrawn.

Request for reconsideration:

It is respectfully requested that the amendments that are requested above be entered into the case and that the claims be re-examined in view of the present amendments and the reasons that are discussed above and be found to be allowable. If one or all of the claims are deemed to not be allowable, the Examiner is invited to call the undersigned attorney at the number given below for resolution of any remaining issues.

Respectfully requested,

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June 5, 2003
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